CLAIMS

1. A adhesive film having at least an adhesive layer, wherein the adhesive layer contains (A) a polyimide resin having a SP value of 10.0 to 11.0 $(cal/cm^3)^{1/2}$ and (B) an epoxy resin, and a tan δ peak temperature is -20 to 60°C and a flow amount is 100 to 1500 μm.

2. The adhesive film according to claim 1, wherein the (B) epoxy resin contains a tri- or more functional epoxy resin and/or an epoxy resin which is solid at room temperature.

3. The adhesive film according to claim 1, wherein the (B) epoxy resin contains 10 to 90% by weight of a tri- or more functional epoxy resin, and 10 to 90% by weight of an epoxy resin which is liquid at room temperature.

4. The adhesive film according to any one of claims 1 to 3, wherein 1 to 50 parts by weight of the (B) epoxy resin is contained relative to 100 parts by weight of the (A) polyimide resin.

5. The adhesive film according to any one of claims 1 to 5, wherein as the (A) polyimide resin, a polyimide resin obtained by reacting an acid dianhydride satisfying the condition where a difference between a heat generation initiating temperature and a heat generation peak temperature by means of DSC is 10°C or smaller, and diamine is contained at 50% by weight or more

of a total polyimide resin.

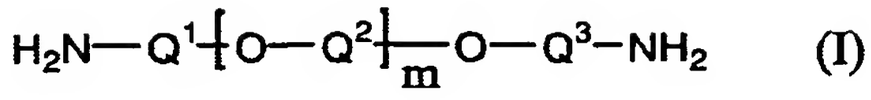
6. The adhesive film according to any one of claims 1 to 5, wherein (C) an epoxy resin curing agent is further contained.

7. The adhesive film according to claim 6, wherein the (C) epoxy resin curing agent is a phenol-based compound having 2 or more hydroxy groups in a molecule and having a number average molecular weight of 400 to 1500.

8. The adhesive film according to claim 6, wherein the (C) epoxy resin curing agent is a naphthol-based compound having 3 or more aromatic rings in a molecule or a trisphenol-based compound.

9. The adhesive film according to claim 7 or 8, wherein an equivalent ratio of an epoxy equivalent of the (B) epoxy resin and an OH equivalent of the (C) epoxy resin curing agent is 0.95 to 1.05:0.95 to 1.05.

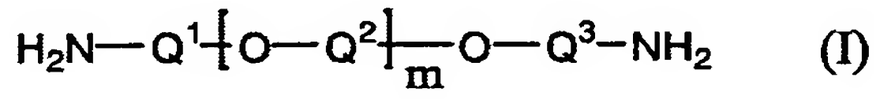
10. The adhesive film according to any one of claims 1 to 9, wherein the (A) polyimide resin is a polyimide resin obtained by reacting a tetracarboxylic acid dianhydride, and diamine containing 1% by mol or more of total diamine of aliphatic etherdiamine represented by the following formula (I):



(I)

(wherein Q^1, Q^2 and Q^3 each represent independently an alkylene group having 1 to 10 carbon atoms, and m represents an integer of 2 to 80).

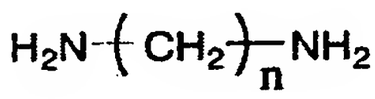
11. The adhesive film according to any one of claims 1 to 9, wherein the (A) polyimide resin is a polyimide resin obtained by reacting a tetracarboxylic acid dianhydride, and diamine containing 1 to 90% by mol of total diamine of aliphatic etherdiamine represented by the following formula (I):



(I)

(wherein Q^1, Q^2 and Q^3 each represent independently an alkylene group having 1 to 10 carbon atoms, and m represents an integer of 2 to 80),

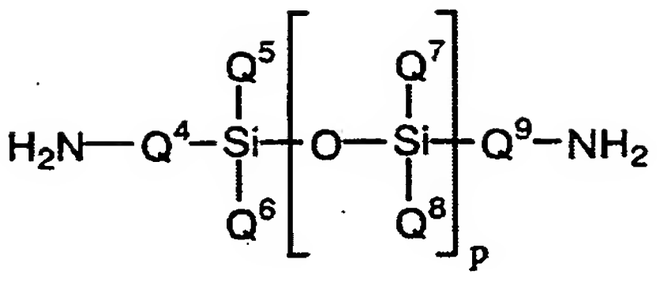
0 to 99% by mol of total diamine of aliphatic diamine represented by the following formula (II):



(II)

(wherein n represents an integer of 5 to 20),

and 0 to 99% by mol of total diamine of siloxanediamine represented by the following formula (III):

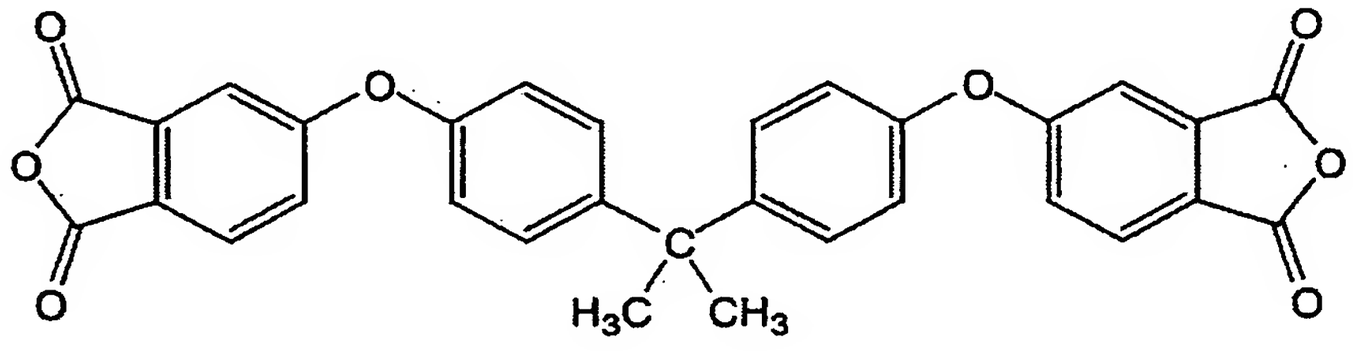


(III)

(wherein Q^4 and Q^9 each represent independently an alkylene group having 1 to 5 carbon atoms or an optionally substituted phenylene group, Q^5, Q^6, Q^7 and Q^8 each represent independently an alkyl group having 1 to 5 carbon atoms, a phenyl group or a phenoxy group, and p represents an integer of 1 to 5).

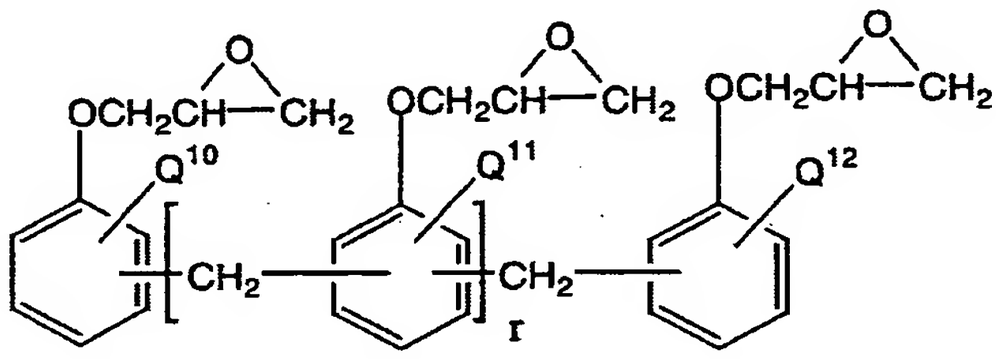
12. The adhesive film according to any one of claims 1 to 11, wherein the (A) polyimide resin is a polyimide resin obtained by reacting a tetracarboxylic acid dianhydride containing 50% by mol of total tetracarboxylic acid dianhydride of tetracarboxylic acid dianhydride containing no ester linkage, and diamine.

13. The adhesive film according to claim 12, wherein the tetracarboxylic acid dianhydride containing no ester linkage is tetracarboxylic acid dianhydride represented by the following formula (IV):



(IV)

14. The adhesive film according to any one of claims 2 to 13, wherein the tri- or more functional epoxy resin is a novolak-type epoxy resin represented by the following formula (VII);



(VII)

(wherein Q^{10}, Q^{11} and Q^{12} each represent independently hydrogen, an alkylene group having 1 to 5 carbon atoms, or an optionally substituted phenylene group, and r represents an integer of 1 to 20).

15. The adhesive film according to any one of claims 1 to 14, which further contains (D) filler.

16. The adhesive film according to claim 15, wherein the (D) filler is insulating filler.

17. The adhesive film according to claim 15 or 16, wherein an average particle diameter of the (D) filler is 10 μm or smaller, and a maximum particle diameter of the (D) filler is 25 μm or smaller.

18. The adhesive film according to any one of claims 15 to 17, wherein a content of the (D) filler is 1 to 50% by volume.

19. The adhesive film according to any one of claims 1 to 18, wherein a difference between surface energy of the adhesive film and surface energy of an organic substrate equipped with a solder resist material is 10mN/m or smaller.

20. The adhesive film according to any one of claims 1 to 19, wherein at a stage where the adhesive is laminated on a silicon wafer at 80°C, a 90° peeling force at 25°C to the silicon wafer is 5N/m or larger.

21. An adhesive sheet, characterized in that a substrate layer, a self-adhesive layer, and the adhesive film layer as claimed in any one of claims 1 to 20 are formed in this order.

22. The adhesive sheet according to claim 21, wherein the self-adhesive layer is a radiation curing-type self-adhesive layer.

23. A semiconductor devise having a structure in which at least one of (1) a semiconductor chip and a semiconductor-carrying support member, and (2) semiconductor chips are adhered via the adhesive film as claimed in any one of claims 1 to 20.